REMARKS/ARGUMENTS

Claim 1 has been amended to address the rejection under 35 USC §112 by changing "tension reel" to "take-up reel" in the last paragraph, and to insert a missing "the."

The amendment follows the Examiner's recommendation, does not affect the scope of the claim as understood by the Examiner, and places the claim either in condition for allowance or in better form for consideration on appeal. Entry of the amendment under 37 C.F.R. §1.116 is requested.

Reconsideration of the final rejection of claims 1-3 is also requested.

Description of the problem

The invention addresses a common problem encountered in the operation of a coating film transfer tool in which a take-up reel is rotated by a drive belt that connects pulleys on the supply reel and the take-up reel. As the coating film is transferred from a base tape onto a receiving surface, the base tape is pulled away from the supply reel, causing the supply reel to rotate. As the supply reel rotates, the drive belt causes the take-up reel to rotate, so that used base tape is wound onto the take-up reel. The problem is that, when the transfer head is lifted from the receiving surface, the base tape tends to be pulled back toward the supply reel, resulting in a space (typically about 3mm) between the leading end of the coating film and the tip of the transfer head. The next time the device is used, the coating film will not reach the transfer head until the transfer head is moved about 3mm while pressing the tape against the receiving surface. Thus, the user must predict a starting position on the receiving surface at which transfer of coating film will begin, and press the transfer head onto the receiving surface at a location appropriately spaced from the starting position.

The pull-back phenomenon results from tension in the section of the drive belt that travels from the pulley on the take-up reel toward the pulley on the supply reel. When the transfer head is lifted, equalization of the tension in both sides of the drive belt causes the supply reel to rotate counterclockwise, causing the tape to be pulled back.

The invention claimed

The applicants, having studied the pull-back phenomenon, realized that, although an exact balance cannot be achieved, an improvement in the balance between the tension in the section of the belt moving toward the supply reel and the tension in the section of the belt moving toward the take-up reel can be realized by providing a belt guide in contact with the section of the belt that moves from the supply reel pulley to the take-up reel pulley, and that this simple measure can reduce pull-back from about 3mm to as little as about 0.5 mm.

Claim 1 accordingly recites that:

> "a belt guide for guiding said belt is disposed between the supply reel and the take-up reel, in contact with a section of the belt which moves from the pulley of the supply reel to the pulley of the take-up reel when the supply reel rotates in said first direction."

The prior art relied upon

The rejection under section 103 is based on Stevens, Masahiko (JP06127774) and Hoffman.

Stevens and Masahiko both describe transfer tools having a belt drive. Stevens' transfer tool has no belt guide. Masahiko's transfer tool has an adjustable roller mounted on an eccentric, the roller being in contact with the section of the drive belt that travels from the take-up reel toward the supply reel. The purpose of the eccentrically mounted roller is to adjust slip torque.

Hoffman describes an apparatus for coating a traveling paper substrate with a polymer such as polyethylene, or with clay. A polymer release film is maintained in contact with the traveling paper substrate through a portion of its travel. In one embodiment, shown in FIG. 5, the polymer release film is wound onto a wind-up roll 60 along with the coated paper substrate. As an alternative, the polymer release film can be in the form of a belt (72) and re-used, as shown in FIGs. 6 and 7. In the case of a belt, a tension roll (55) is provided "to compensate for stretching which occurs in the belt during use." (Hoffman, col. 8, lines 36-38.)

The rejection under 35 U.S.C. § 103(a)

The rejection acknowledges that neither Stevens nor Masahiko teaches a guide in contact with the section of the belt that moves from the supply reel toward the take-up reel. However, the rejection asserts that it would have been obvious to provide a guide in this position because Hoffman's guide is on the side of the belt 72 that moves from the large "pulley"[1] 56 to the small "pulley" 54, and because "Hoffman et al. shows this to be a functionally equivalent alternative expedient to the placement of the pressing roller of Masahiko."

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[1] Hoffman describes part 56 as a "hot drum" or as a "dryer roll," and part 54 as a "backing roll." Neither is a "pulley."

Reasons why the invention would not have been obvious

First, the primary function of the belt 72 in Hoffman is to maintain a layer of polyethylene or clay against a paperboard substrate. It does not appear that the belt performs a driving function analogous to that of the belts in Stevens and Masahiko.

There is nothing in the prior art of record that suggests that the drive belt in a coating film transfer tool stretches significantly over time as does the belt in the paperboard coater of the Hoffman patent. Furthermore, it is reasonable to assume that Hoffman's roller 55, if it is to "compensate for stretching which occurs in the belt during use," must be a movable roller associated with some sort of tensioner such as a spring, a weight, or the like. A person having ordinary skill in the art would not want to go to the trouble of providing a complicated tensioner in a coating film tool, especially if stretching of the belt over time is not a significant problem. Therefore, Hoffman does not provide a reason to utilize a roller (corresponding to Hoffman's roller 55 (FIGs. 6 and 7)) on either side of a belt in a coating film transfer tool.

The purpose of the torque varying mechanism 14 in Masahiko is to adjust slip, so that the device can be operated with a "light operating force" as the diameter of the tape wound on the supply reel decreases and the diameter of the tape wound on the take-up reel increases. In Masahiko, the torque varying mechanism 14 is on the side of the belt that moves from the take-up reel toward the supply reel. This is the side that is in tension. If the torque varying mechanism were on the slack side instead, it would have little, if any, effect on slippage of the belt on the pulleys, and would not be expected to adjust slip satisfactorily.

For the above reasons, neither Hoffman nor Masahiko supplies a motivation that would lead to placement of a belt guide on the slack side in a coating film tool. Nothing in any of the three references suggests the concept of achieving an improved balance between the tensions on the two sides of a coating film tool drive belt or the advantage of doing so: the reduction of pull-back.

Favorable reconsideration and allowance are respectfully requested.

Respectfully submitted,
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